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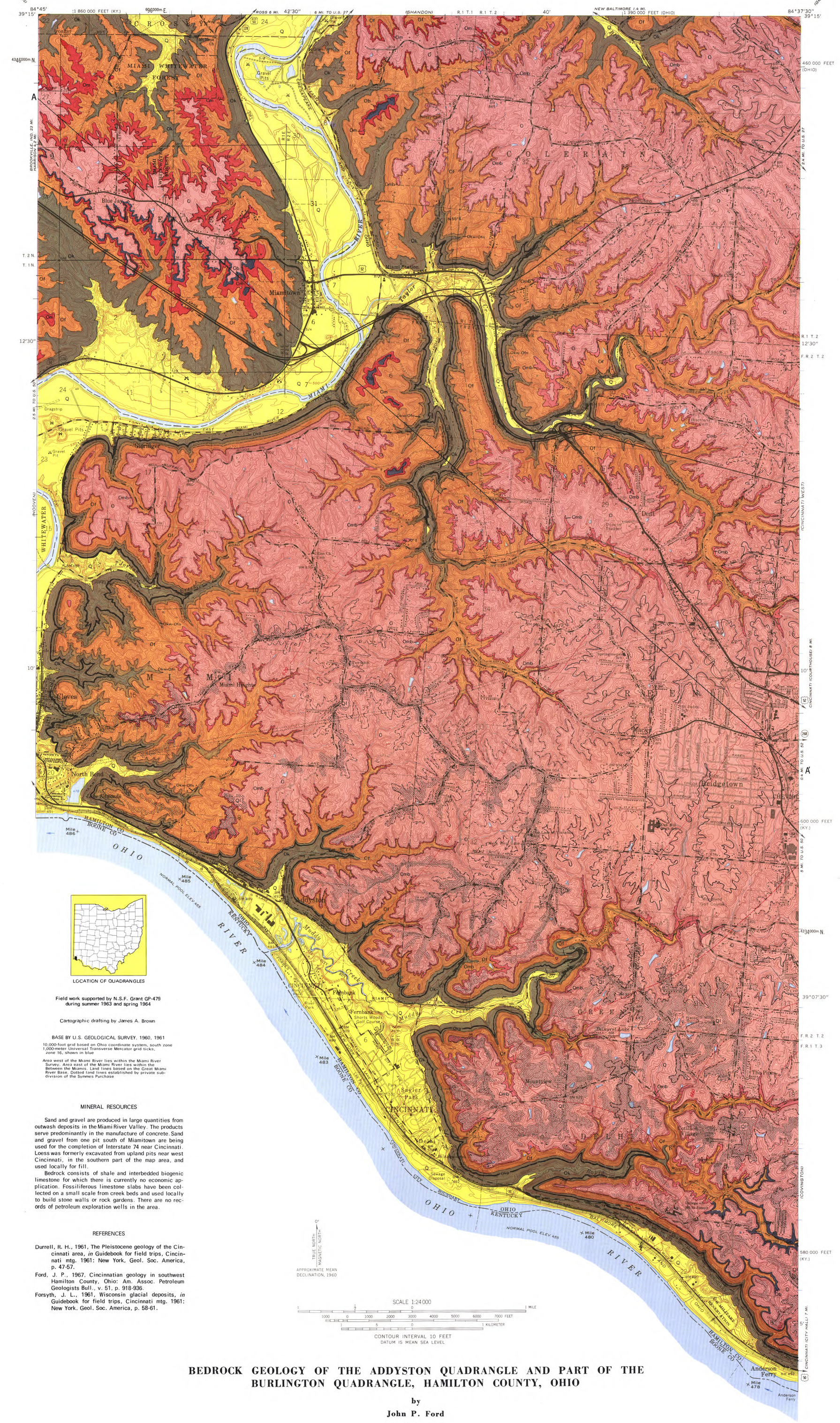
OHIO DIVISION OF GEOLOGICAL SURVEY
REPORT OF INVESTIGATIONS NO. 83

BEDROCK GEOLOGY OF THE ADDYSTON QUADRANGLE
AND PART OF THE BURLINGTON QUADRANGLE,
HAMILTON COUNTY, OHIO



LOCATION OF QUADRANGLES

Field work supported by N.S.F. Grant GP-479
during summer 1963 and spring 1964

Cartographic drafting by James A. Brown

BASE BY U.S. GEOLOGICAL SURVEY, 1960, 1961

10,000-foot grid based on Ohio coordinate system, south zone
1,000-meter Universal Transverse Mercator grid ticks,
zone 16, shown in blue

Area west of the Miami River lies within the Miami River Survey. Area east of the Miami River lies within the Between the Miamis. Land lines based on the Great Miami River Base. Dotted land lines established by private subdivision of the Symmes Purchase

MINERAL RESOURCES

Sand and gravel are produced in large quantities from outwash deposits in the Miami River Valley. The products serve predominantly in the manufacture of concrete. Sand and gravel from one pit south of Miamitown are being used for the completion of Interstate 74 near Cincinnati. Loess was formerly excavated from upland pits near west Cincinnati, in the southern part of the map area, and used locally for fill.

Bedrock consists of shale and interbedded biogenic limestone for which there is currently no economic application. Fossiliferous limestone slabs have been collected on a small scale from creek beds and used locally to build stone walls or rock gardens. There are no records of petroleum exploration wells in the area.

REFERENCES

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Ford, J. P., 1967, Cincinnatian geology in southwest Hamilton County, Ohio: Am. Assoc. Petroleum Geologists Bull., v. 51, p. 918-936.

Forsyth, J. L., 1961, Wisconsin glacial deposits, *in* Guidebook for field trips, Cincinnati mtg. 1961: New York, Geol. Soc. America, p. 58-61.

EXPLANATION

Pleistocene (?) and Recent — QUATERNARY

Ql — Loess

Q — Alluvium, undifferentiated

Upper Ordovician — ORDOVICIAN

O—P — Undifferentiated
p, *Platystrophia ponderosa* bed, long dashed where concealed, short dashed where inferred

Om, Omb, Ob — Ob, Bellevue Limestone, shown by heavy line in small area northwest of Miami River
Om, Miamitown Shale
Omb, Bellevue Limestone and Miamitown Shale combined

Of, Ok — Of, Fairview Formation
Ofn, North Bend Tongue of Fairview Formation
Ok, Kope Formation
Okw, Wesselman Tongue of Kope Formation
Okg, Grand Avenue Member of Kope Formation

Contact
Long dashed where approximately located, short dashed were concealed

620
Structure contour
Drawn on base of North Bend Tongue of Fairview Formation; long dashed where approximately located, short dashed where datum is above land surface; contour interval 10 feet; not shown where data insufficient

N 70°E
Local small-scale structure
Strike and dip of bed unspecified where data insufficient

Gravel pit, operating

Gravel or sand pit, abandoned

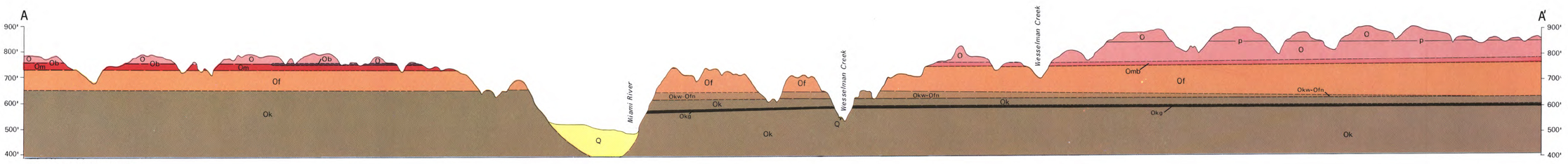
SYSTEM	FORMATION	LITHOLOGY	THICKNESS IN FEET	DESCRIPTION
QUATERNARY	Loess		0-20+	Fine silt and clay, grayish- to yellowish-orange; present as thin patchy cover restricted to hilltops in southern part of map area.
	Alluvium		0-70+	Clay, silt, sand, and gravel, in deposits of Ohio and Miami Rivers and in tributary valleys. Clay and silt, yellowish-gray to medium-brown; commonly with pebbles of igneous and metamorphic rock; lithologic resemblance to till. Sand and gravel, yellowish-brown, pebbles of igneous and metamorphic rock and limestone slabs and pebbles derived from nearby rocks; mostly in terraces.
ORDOVICIAN	Undifferentiated		0-135+	Shale and interbedded limestone; variable thickness ratio; forming weakly resistant hilltop outliers in eastern part of map area; commonly slumped or built over. Shale, medium- to dark-gray, medium- to thick-bedded; weathering light to yellowish gray; units up to 4 feet thick. Limestone, medium- to dark-gray, thin- to medium-bedded, coarse-grained, fossiliferous; weathering light to yellowish brown; units commonly less than 0.5 foot thick; moderate to abundant silt and clay content; knobby bedding 75 to 90 feet above base of Bellevue Limestone where *Platystrophia ponderosa* is found in peak abundance in units 2 to 5 feet thick.
	Bellevue Limestone			Limestone, medium- to dark-gray; massive thin-bedded coquinite; bedding planes irregular and discontinuous and commonly outlined by fossils; whole and broken bryozoans and brachiopods common; discrete interbeds of fossiliferous coarse-grained thin- to medium-bedded limestone and medium- to dark-gray shale and mudstone present as cliffs at or near hilltops; crenulated aspect resulting from weathering of clastic detrital matrix; formation thinning northwestward to featheredge.
	Miamitown Shale		0-25	
			0-35	Shale and interbedded limestone, 9:1 thickness ratio. Shale, medium- to dark-gray, medium- to thick-bedded; weathering light gray; units up to 7 feet thick; thin discontinuous calcareous layers. Limestone, medium- to dark-gray, thin- to medium-bedded, fine- to medium-grained, fossiliferous; weathering light gray to yellowish brown; units less than 0.5 foot thick, nodular in uppermost 3 feet of formation; moderate to large silt and clay fraction; gastropod-pelecypod assemblage common in uppermost 5 feet; formation thinning southeastward to featheredge.
	Fairview Formation		72-113	Shale, mudstone, and interbedded limestone, 3:1 thickness ratio. Shale and mudstone, medium- to dark-gray, thin- to medium-bedded; weathering light to yellowish gray; units not over 1.5 feet thick; thin fossiliferous interbeds consisting mostly of bryozoan fragments; thin-bedded pencil shale in places; claystone and siltstone units scattered throughout; shales consisting mostly of calcite, chlorite, illite, and quartz, with varying minor amounts of pyrite and other heavy minerals; shale predominating in lower one-third, mudstone in upper two-thirds of formation. Limestone, medium- to dark-gray, thin- to medium-bedded, medium- to coarse-grained, biogenic; weathering yellowish brown; units up to 1.5 feet thick; whole and broken fossils in a matrix of sand-sized calcareous fragments and up to 25 percent silt and clay; a few limestone units uniformly fine grained, with up to 50 percent silt and clay; limestones predominantly clean and closely spaced in southern part of map area; progressively more contaminated, thinner and more irregularly bedded, and more discontinuous northward and westward; bedding surfaces commonly irregular, in places impressed with ripple marks, and sporadically covered with phosphatic material in uppermost one-third of formation; pinch-and-swell bedding and pinchout common; uppermost 10 to 15 feet locally containing shingled biogenic limestones with brachiopod shells stacked edgewise and crenulated coquinite limestones containing large numbers of whole brachiopods and bryozoans. North Bend Tongue restricted to central part of map area between Miami River and Muddy Creek.
	Wesselman Tongue / North Bend Tongue			
	Grand Avenue Member		9-12	Shale and interbedded limestone, 3.5:1 thickness ratio. Shale, medium- to dark-gray, thin- to medium-bedded; weathering light to yellowish gray; units not over 2 feet thick. Limestone, medium- to dark-gray, thin- to medium-bedded, medium- to coarse-grained, biogenic; weathering yellowish brown; units up to 1 foot thick; abundant bryozoans and brachiopods; member not clearly distinguishable north and west of Miami River owing to thinning and pinchout of limestone units.
	Kope Formation		156+	Shale and interbedded limestone, greater than 4:1 thickness ratio. Shale, medium- to dark-gray, medium- to thick-bedded; weathering light gray; units up to 7 feet thick; containing mostly illite, calcite, chlorite, and quartz, with varying minor amounts of pyrite and other heavy minerals; thin fossiliferous interbeds consisting mostly of bryozoan fragments and abundant small brachiopods, less commonly of trilobites and clusters of nautiloid cephalopods; some beds weakly fissile to nonfissile, including mudstone and claystone. Limestone, medium- to dark-gray, thin- to medium-bedded, medium- to coarse-grained, biogenic; weathering yellowish brown; units up to 1 foot thick; mostly whole and broken fossils in a matrix of sand-sized calcareous fragments and up to 25 percent silt and clay; some limestones uniformly fine grained, with up to 50 percent silt and clay, and laminated or crosslaminated in some places; coarse-grained fossiliferous limestone units in places displaying crossbedded megaripples; noticeably more limestone beds in uppermost one-third of formation than in middle one-third. Wesselman Tongue restricted to central part of map area between Miami River and Muddy Creek.
			200+	

BEDROCK GEOLOGY OF THE ADDYSTON QUADRANGLE AND PART OF THE BURLINGTON QUADRANGLE, HAMILTON COUNTY, OHIO

by

John P. Ford

1972



VERTICAL EXAGGERATION 8X